

903 GENERAL EQUIPMENT

903.01 COLD PLANING MACHINE

The planer shall be capable of removing the existing pavement surface to the grade and slope specified. The milled surface shall be semi-smooth and acceptable for traffic. The equipment shall have an effective means for controlling dust and be environmentally acceptable.

903.02 JOINT SEALER MELTING - APPLICATOR APPARATUS

The apparatus for melting and pouring joint-sealing material of the hot-poured type shall be of the double-boiler, indirect heating type. The heat transfer medium shall be a high flash point oil or other material approved by the Engineer. Gasoline, bottled gas, or other approved fuel may be used for heating the oil bath and the heating shall be thermostatically controlled.

The apparatus shall be equipped with an effective mechanically operated agitator and shall have a permanent recording device to indicate the temperature of the joint- sealing material at all times.

The apparatus shall be a melting-applicator combination with means of applying the joint-sealing material under pressure and a means of receiving the cold material without interfering with the dispensing of the melted material.

It is intended that all joint sealing will normally be accomplished with the above described equipment. However, in very special cases where an extremely small amount of material is required, the material may be heated in the melting-applicator apparatus and poured from a double-boiler pouring apparatus if approved by the Engineer. In the event such equipment is approved, it shall be of the indirect, thermostatically controlled heating type capable of maintaining the material at a satisfactory pouring temperature. It shall be equipped with a mechanical or hand operated agitator. A thermometer with a suitable temperature range for determining the temperature of the material shall be provided. Under no circumstances will handpouring pots be permitted.

903.03 STRAIGHTEDGES

Straightedges shall be 10 feet in length, be constructed of a light, durable metal, and have handles securely attached. The straightedge shall not vary more than 1/32 inch in 10 feet from a true plane.

Rolling straightedges with deviation marking abilities may be used upon approval of the Engineer.

903.04 TELEVISION INSPECTION EQUIPMENT

(A) TELEVISION EQUIPMENT

Television inspection equipment shall include at least the following minimum items:

(1) A color, sewer television camera, specifically designed for operation through a minimum of 2,000 feet of single conductor cable in sanitary and storm sewers.

(a) Camera outside diameter no greater than 3-inches to allow for inspection in small size pipes. Camera operating temperature range of 0 to 50 degrees C.

- (b) Capable of providing 320 lines of horizontal resolution and 350 lines of vertical resolution.
- (c) Solid-state image pickup device containing in excess of 250,000 picture elements (pixels).
- (d) 525 scanning lines, 60 fields, 30 frames, interlaces 2:1 - NTSC Color Standard, with geometrical image distortion not exceeding two percent (picture transmission systems requiring use of R.F. suppressors and subject to local transmitter interference not acceptable).
- (e) Full, true color, sharp image video bandwidths with no sacrifice or visible streaking of low frequency response; also no visible streaking of the low frequency test bars when viewing a standard EIA Test Chart.
- (f) 1.0V (140 IRE units) composite camera video signal at the monitor after transmission through 2,000 feet of single conductor cable.
- (g) Equipped with an f/1.4 wide angle lens with optical viewing angle to 70 degrees, auto iris type to control the illumination range for an acceptable picture between 10 and 100,000 Lux, with manual override remotely controlled from the viewing station.
- (2) A minimum of 1,000 linear feet of cable to transmit picture from camera to recording and viewing unit.
- (3) A video cassette recorder capable of slow motion playback without noise bars.
- (4) Video cassettes documenting all the television inspection with 1/2 inch tape width, ninety (90) minutes duration maximum, with "data view" indicating project address identification, date, along with voice description of sewer inspected during video recording.
- (5) An on-board television viewing monitor consisting of high quality, industrial grade color unit providing in excess of 500 lines of resolution.
- (a) High resolution "trinitron" type picture tube or approved equivalent, measuring a minimum of 12 inches diagonally.
- (b) Include voltage compensation circuits to reduce picture distortion to less than one percent under voltage conditions varying from 105V to 120V.
- (c) Housed in a steel cabinet which acts as shield to minimize effects of local magnetic fields such as transformers, coils, wraps of cable, etc. (monitors having inadequate or no protection from local magnetic fields, thereby contributing to loss of color picture purity, not acceptable).
- (d) Equipped with a speaker to allow for audio playback from video tape recording.

(B) LIGHTING EQUIPMENT

The halogen lighting system shall be comprised of controlled-beam, reflector-sealed lamps with an automatic light compensator. The lighting system shall be capable of supplying variable light of high intensity.

(C) CAMERA TRANSPORT

Portable, mutual winches or motorized mechanical equipment of indirect drive type shall be provided complete with sufficient cable or rods to permit inspection of all sewer sections specified and capable of moving camera through the sewer pipe in either direction at a uniform, slow rate.

(D) METERING DEVICE

A remote-reading, footage metering device(s) shall be provided such that camera location at ground level is visually displayed at all times on the television screen. Footage metering device shall be designed so that the distance recorder can be set at zero when camera is at entrance of pipe. Metering device shall have an accuracy of one percent \pm of actual distance between manholes. Marking of cable, or similar means that require interpolation of depth of sewer, will not be permitted. A measuring target in front of the television camera shall be an exact measurement reference point, and the meter reading shall show the exact location of the reference point.

(E) MONITOR TRAILER

A lighted trailer or other suitable shelter, complete with table and chairs, shall be provided for observation of the television monitor and record keeping. Trailers shall be large enough to accommodate at least three people at any time for the purpose of viewing the monitor while TV inspection is in progress.

(F) ACCESSORIES

Accessory items shall include barricades, ladders, pulleys, safety equipment.